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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief

MONTHLY NEWS LETTER

WASHINGTON, D.C., SEPTEMBER 20, 1928.

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: PARTICULAR ATTENTION IS CALLED TO THE INSTRUCTIONS :
: ISSUED RECENTLY WITH REFERENCE TO THE PAYMENT OF THE STATE :
: GASOLINE TAX. THE PROCEDURE DESCRIBED SHOULD BE FOLLOWED :
: IN ALL CASES. :
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ON SEPTEMBER 13 MR. MCCRORY BEGAN A FIELD TRIP, PROCEEDING FIRST TO MOBILE, ALABAMA TO CONFER WITH CERTAIN PECAN GROWERS WITH REFERENCE TO THE POSSIBILITY OF TAKING UP STUDIES OF THE ARTIFICIAL DRYING OF PECANS. FROM MOBILE MR. MCCRORY WENT TO TALLULAH, LOUISIANA TO GO OVER THE COTTON DRYING AND OTHER MACHINERY INVESTIGATIONS WITH MR. BENNETT. BEFORE RETURNING TO WASHINGTON, MR. MCCRORY EXPECTS TO INSPECT THE PROGRESS OF THE WORK CARRIED ON BY B. S. CLAYTON IN CONNECTION WITH RICE IRRIGATION AT STUTTGART, ARKANSAS, AND BY C. E. RAMSER, RELATING TO RUN-OFF INVESTIGATIONS, CAPE GIRARDEAU, MISSOURI. HE PLANS ALSO TO ATTEND THE ANNUAL CONFERENCE ON THE EUROPEAN CORN BORER AT TOLEDO, OHIO, SEPTEMBER 27-28.

L. A. JONES RETURNED ON SEPTEMBER 15 FROM OKLAHOMA, WHERE HE WENT TO MAKE A FINAL SELECTION OF A FARM ON WHICH EROSION AND TERRACING INVESTIGATIONS WILL BE CONDUCTED ON A LARGE SCALE. UNDER AN ARRANGEMENT WITH THE GUTHRIE CHAMBER OF COMMERCE, WHICH IS VERY MUCH INTERESTED IN THE MATTER OF FARM LAND EROSION, THE CHAMBER PROVIDES THE FARM FREE OF RENTAL. IT IS PROPOSED TO ASSIGN A DRAINAGE ENGINEER TO THE PROJECT TO CARRY ON INVESTIGATIONS TO DETERMINE THE PROPER SPACING AND SLOPES FOR TERRACES ON THE TYPE OF SOIL FOUND ON THE FARM - WHICH IS TYPICAL OF LARGE AREAS IN THE STATE - AND TO OBTAIN A COMPARISON IN THE RATE OF EROSION AS BETWEEN TERRACED AND UNTERRACED LAND. WORK WILL ALSO BE CARRIED ON TO DETERMINE THE MOST ECONOMICAL METHOD OF CONSTRUCTING TERRACES. IN ADDITION TO THE WORK OF EROSION, IT IS PLANNED TO CULTIVATE THE FARM WITH MODERN MACHINERY WITH A VIEW OF DETERMINING AND OVERCOMING DIFFICULTIES INVOLVED IN USING SUCH MACHINERY ON TERRACED LAND.

EARLY IN THE MONTH MR. MCCRORY AND MR. McLAUGHLIN, IN COMPANY WITH L. M. WINSOR, VISITED THE EXPERIMENTAL DYKES CONSTRUCTED LAST YEAR ON THE EDGE OF GREAT SALT LAKE WEST OF FARMINGTON, AND SPENT A DAY GOING OVER THE AREA AT THE MOUTH OF BEAR RIVER ON THE NORTH EDGE OF GREAT SALT LAKE. THE GAME REFUGE FOR THE BIOLOGICAL SURVEY IS TO BE CONSTRUCTED AT THIS POINT.

AT THE REQUEST OF THE STATE ENGINEER OF CALIFORNIA, A SPECIAL COOPERATIVE IRRIGATION INVESTIGATION WAS UNDERTAKEN DURING THE PAST YEAR TO DETERMINE THE PENETRATION AND STORAGE OF RAIN FALLING UPON THE VALLEY FLOORS OF THE SANTA ANA RIVER AREA. THIS WORK WAS DONE UNDER THE LEADERSHIP OF HARRY F. BLANEY, ASSISTED BY C. A. TAYLOR. MR. BLANEY HAS SUBMITTED THE FOLLOWING NOTES ON THIS WORK:

"WATER SUPPLY RESULTING FROM ABSORPTION OF RAINFALL ON THE VALLEY FLOORS IS OF GREAT ECONOMIC IMPORTANCE IN THE SEMI-ARID WEST, PARTICULARLY IN THE VALLEYS OF SOUTHERN CALIFORNIA WHERE SEASONAL RAINFALL VARIES FROM ABOUT 6 TO 24 INCHES. THE WATERSHED OF THE SANTA ANA RIVER HAS A TOTAL LENGTH OF 100 MILES AND DRAINS 2,050 SQUARE MILES, OF WHICH 854 SQUARE MILES ARE MAIN VALLEY FLOOR. THERE ARE 342,700 ACRES OF LAND UNDER IRRIGATION.

"A LARGE NUMBER OF GENERAL RAINFALL PENETRATION STATIONS WERE ESTABLISHED ON PREDOMINATING SOIL TYPES, AND SOIL SAMPLES TAKEN AT FOOT INTERVALS TO A DEPTH OF 12 TO 18 FEET AND THE MOISTURE CONTENT DETERMINED. SPECIAL STATIONS EQUIPPED TO MEASURE RAINFALL AND SURFACE RUN-OFF WERE LOCATED IN TYPICAL AREAS FOR AN INTENSIVE STUDY OF SOIL MOISTURE CONDITIONS THROUGHOUT THE SEASON. HERE SOIL SAMPLES WERE TAKEN TO A DEPTH BELOW THE ROOT ZONE FROM CROPPED AND CLEAN CULTIVATED PLOTS SO AS TO DETERMINE EVAPORATION, TRANSPIRATION AND PENETRATION AFTER EACH RAIN STORM. IN THE GRAVEL AREAS SHAFTS WERE DUG AND PANS INSTALLED IN TUNNELS AT 12 AND 20 FEET BELOW THE SURFACE TO COLLECT RAINFALL PENETRATION TO SUCH DEPTHS.

"THE RAINFALL DURING THE 1927-28 SEASON ON MOST OF THE VALLEY FLOORS WAS LESS THAN 15 INCHES AND WAS ABOUT 20 PER CENT BELOW NORMAL. THUS THE RESULTS ARE FOR DRY YEAR CONDITIONS. A PRELIMINARY STUDY OF THE DATA FOR THE PAST SEASON INDICATES THAT PRACTICALLY NO RAIN WATER PENETRATED BELOW THE ROOT ZONE IN AREAS WHERE VEGETATION WAS ACTIVE. HOWEVER, SOME PENETRATION OCCURRED ON LANDS IRRIGATED DURING THE WINTER, BARE LAND, CLEAN CULTIVATED DECIDUOUS ORCHARDS AND VINEYARDS. THE RESULTS ALSO INDICATE THAT A MORE INTENSIVE STUDY SHOULD BE MADE OF WINTER CONSUMPTIVE USE OF WATER BY CROPS AS TRANSPIRATION AND EVAPORATION PREVENT A LARGE PORTION OF THE RAINFALL FROM REACHING THE GROUND WATER SUPPLY."

RECENTLY A COOPERATIVE PROJECT HAS BEEN ENTERED INTO WITH THE FOREST SERVICE AND SEVERAL AGENCIES OF THE STATE OF MINNESOTA, DESIGNED TO DETERMINE THE EFFECT OF DRAINAGE UPON FORESTED SWAMPS IN NORTHERN MINNESOTA. D. G. MILLER, ASSISTED BY P. C. MCGREW, WILL REPRESENT THE DIVISION IN THIS WORK.

ANOTHER PROJECT IN MINNESOTA WILL RELATE TO LAND CLEARING AND DEVELOPMENT. THIS PROJECT WILL BE CONDUCTED IN COOPERATION WITH THE UNIVERSITY OF MINNESOTA, AND THE DIVISION WILL BE REPRESENTED BY GEORGE R. BOYD, ASSISTED LATER BY A LAND CLEARING SPECIALIST.

AT THE REQUEST OF THE BUREAU OF PLANT INDUSTRY, F. O. BARTEL WILL, IN THE NEAR FUTURE, MAKE SOME ENGINEERING STUDIES WITH REFERENCE TO A LARGE AREA OF PEAT LAND IN CARTERET COUNTY, NORTH CAROLINA. IN THIS CONNECTION PROFILES WILL BE RUN TO ESTABLISH A BASIS FOR DETERMINING THE SHRINKAGE OF PEAT LAND WHEN DRAINED, AND RECORD WILL BE KEPT OF THE FLUCTUATIONS OF THE WATER TABLE.

AS A RESULT OF STUDIES MADE DURING THE PAST SEVERAL MONTHS, A REPORT WILL BE ISSUED IN THE NEAR FUTURE GIVING DIRECTIONS WHICH WILL ENABLE THE FARMER TO CONSTRUCT AND ATTACH A LOW-CUTTING DEVICE ON HIS CORN BINDER. LOW-CUTTING THE CORN IS CONSIDERED ONE OF THE MOST EFFECTIVE MEANS OF CONTROLLING THE SPREAD OF THE CORN BORER. OWING TO THE DEPLETED CONDITION OF THE BUREAU PRINTING FUND, THIS REPORT WILL BE ISSUED IN ROTOTYPE FORM, UNDER WHICH PROCESS A PHOTOGRAPHIC REPRODUCTION IS MADE OF THE TYPE-WRITTEN PAGES AND ACCOMPANYING ILLUSTRATIONS.

W. M. HURST AND W. R. HUMPHRIES HAVE ABOUT COMPLETED THEIR SEASON'S STUDY OF THE MECHANICAL SIDE OF THE USE OF THE COMBINE-HARVESTER AS APPLIED TO WHEAT IN NORTH DAKOTA AND MINNESOTA. THIS IS A CONTINUATION OF THE PROJECT CARRIED ON FOR THE PAST THREE YEARS, COVERING THE USE OF THE COMBINE IN CONNECTION WITH VARIOUS SMALL-GRAIN CROPS. THE STUDIES BY MR. HURST IN THIS CONNECTION WILL BE USED AS A BASIS FOR A BULLETIN, "CARE AND USE OF THE COMBINE-HARVESTER."

CARL ROHWER REPORTS THAT EVAPORATION OBSERVATIONS ON THE EFFECT OF ALTITUDE WERE CARRIED ON AT THE SUMMIT OF PIKES PEAK AT AN ELEVATION OF 14,109 FEET ABOVE SEA LEVEL FOR A PERIOD OF TWO WEEKS. RATHER STORMY WEATHER WAS ENCOUNTERED THROUGHOUT THE ENTIRE PERIOD, WHICH MAY HAVE HAD SOME EFFECT ON THE RESULTS OBTAINED. HOWEVER, AN APPRECIABLE REDUCTION WAS OBSERVED IN THE EVAPORATION AT THIS ALTITUDE BUT NOT AS MUCH AS WAS ANTICIPATED. THE DIFFERENCE, HOWEVER, WAS WITHIN THE LIMITS OF THE PROBABLE ERROR OF THE RESULT. AFTER COMPLETING THE OBSERVATIONS ON PIKES PEAK, THE EVAPORATION APPARATUS WAS INSTALLED AT FORT COLLINS, FOR A SERIES OF CHECK TESTS TO DETERMINE IF ANY CHANGES HAVE OCCURRED IN THE APPARATUS DURING ITS USE IN THE ALTITUDE EXPERIMENTS.

CONTINUING A SERIES OF INVESTIGATIONS OF OREGON IRRIGATION DISTRICTS IN FINANCIAL DIFFICULTY, P. A. EWING MADE A TRIP TO LONE PINE, SUMMER LAKE AND SILVER LAKE. HE MET MR. McLAUGHLIN AT PRINEVILLE AND WAS ACCOMPANIED BY HIM ON PART OF THE TRIP, RETURNING TO BERKELEY LATE IN THE MONTH.

DURING THE LAST DAYS OF JULY AND THE FIRST OF AUGUST, A. L. FELLOWS WAS IN CONFERENCE WITH REPRESENTATIVES OF THE U. S. BIOLOGICAL SURVEY AND PARK SERVICE AT WIND CAVE, SOUTH DAKOTA, IN CONNECTION WITH A CONTEMPLATED RESERVOIR. MR. FELLOWS COMPLETED A PRELIMINARY REPORT OF HIS INVESTIGATIONS IN MID-AUGUST.

L. T. JESSUP MADE AN INVESTIGATION OF THE PROPOSED FARSON DRAINAGE DISTRICT NEAR ROCK SPRINGS, WYOMING, DURING AUGUST. THE PROPOSED DISTRICT COVERS AN AREA OF APPROXIMATELY 6,000 ACRES.

W. L. STOCKWELL, STATIONED AT LOS ANGELES, HAS RESIGNED FROM THE SERVICE EFFECTIVE AT THE TERMINATION OF AUGUST 31 TO ACCEPT A POSITION WITH A COMMERCIAL ELECTRIC COMPANY IN LOS ANGELES.

THE BERKELEY OFFICE RECEIVED THE FOLLOWING REPORTS DURING THE PAST MONTH:

PRELIMINARY REPORT ON PROPOSED SCENIC LAKE, WIND CAVE NATIONAL PARK, SOUTH DAKOTA, BY A. L. FELLOWS. INVESTIGATIONS OF IRRIGATION OF RICE UNDER NECHES CANAL IN JEFFERSON COUNTY, TEXAS, IN 1926, BY R. G. HEMPHILL AND ROBERT G. WEST.

M. C. BETTS AND T. A. H. MILLER REPORT THAT THE PAST SUMMER HAS BEEN A VERY BUSY ONE FOR THE STRUCTURAL SECTION OF THE DIVISION IN CONNECTION WITH BUILDINGS FOR VARIOUS BUREAUS. PLANS WERE PREPARED FOR A STEEL FRAME AND CONCRETE ADDITION FOR THE BUREAU OF SOILS BUILDING ON ARLINGTON FARM ALSO FOR A HEADHOUSE AND GREENHOUSE; THESE STRUCTURES ARE NEARING COMPLETION. A REINFORCED CONCRETE AND BRICK ADDITION TO THE ABATTOIR AT BELTSVILLE IS BEING MADE IN ACCORDANCE WITH PLANS PREPARED IN THE DIVISION AND UNDER THE DIVISION'S SUPERVISION. TWO KNOCK-DOWN TIMBER CORN BORER CAGES COVERING AN ACRE EACH WERE DESIGNED, FABRICATED IN THE MECHANICAL SHOPS AT WASHINGTON, AND ERECTED IN TOLEDO, OHIO. PLANS AND SPECIFICATIONS ARE ABOUT COMPLETE FOR A GROUP OF BUILDINGS FOR HOUSING BEEF CATTLE AT BELTSVILLE. THE MAIN BARN IS 36 BY 116 FEET OF CINDER CONCRETE BLOCKS AND BRACED RAFTER ROOF. A SPECIAL FEATURE OF THE BARN IS THE ARRANGEMENT OF STORAGE BINS, FEED BINS AND ELEVATOR FOR GRAIN TO PROVIDE FOR 200 CATTLE. A ONE-STORY NUTRITION BARN 36 BY 100 FORMS ONE WING WHILE AN OPEN CATTLE SHED 26 BY 100 FORMS ANOTHER. THESE TWO WINGS ARE OF CINDER BLOCK AND THE DESIGNS DIFFER FROM MOST BARNs IN THAT FLAT ROOFS INSULATED WITH BOARD INSULATION ARE EMPLOYED. THIS LATTER TYPE OF DESIGN IS VERY ECONOMICAL OF MATERIAL AND IN UPKEEP. ANOTHER PROJECT IS A GREENHOUSE, HEADHOUSE AND IMPLEMENT SHED FOR PEACH INVESTIGATIONS IN GEORGIA.

J. T. BOWEN HAS BEEN ENGAGED IN THE PREPARATION OF PLANS AND SPECIFICATIONS FOR MACHINERY, BOILERS, AND OTHER EQUIPMENT FOR AN ABATTOIR AT THE BELTSVILLE FARM, MARYLAND, ALSO AN INCINERATOR FOR BURNING UP THE WASTES FROM THE KILLING FLOOR. ANOTHER PROJECT CONSISTS OF THE PREPARATION OF DESIGNS AND SPECIFICATIONS FOR A CONSTANT TEMPERATURE AND HUMIDITY ROOM FOR A WOOL LABORATORY IN WASHINGTON. MR. BOWEN HAS PREPARED AN ARTICLE FOR THE ENCYCLOPEDIA BRITANNICA ON THE APPLICATION OF ELECTRICITY TO AGRICULTURE IN THE UNITED STATES.

